PLANETARY PHENOMENA FOR MAY AND JUNE, 1920

By Malcolm McNeill

PHASES OF THE MOON, PACIFIC TIME

Full Moon	May	2,	5^h47^m	P.M.	Full Moon	June	1, 9^h18^m A.M.
Last Quarter	"	10,	9 51	P.M.	Last Quarter	"	9, 10 58 A.M.
New Moon	"	17,	10 25	P.M.	New Moon	"	16, 5 41 A.M.
First Quarter	"	24,	1 7	P.M.	First Quarter	"	22, 10 49 P.M.

The first of the four eclipses for 1920 will be *a total eclipse of the Moon* on May 2; the beginning visible on both sides of the Atlantic Ocean, the ending visible from western Europe to the eastern part of the Pacific Ocean. Circumstances of the eclipse are as follows, Pacific Time:

Moon enters penumbra	May	2, 2^h49^m	P.M.
Moon enters umbra	"	2, 4 1	P.M.
Total eclipse begins	"	2, 5 15	P.M.
Middle of eclipse	"	2, 5 51	P.M.
Total eclipse ends	"	2, 6 27	P.M.
Moon leaves umbra	"	2, 7 41	P.M.
Moon leaves penumbra	"	2, 8 53	P.M.

The second will be *a partial eclipse of the Sun* on the night of May 17th-18th, Pacific Time. At its maximum it will be nearly total; but it will be visible only from the southern part of the eastern hemisphere. Australia will be the only large land mass in its track.

The summer solstice occurs June 21st, 9^h40^m A.M., Pacific Time.

Mercury on May 1st is a morning star, rising less than an hour before sunrise, too short an interval for naked-eye observation. Its distance from the Sun diminishes and superior conjunction is reached on May 25th, the planet becoming an evening star. The distance from the Sun increases until the planet reaches greatest east elongation, 25°41′ on June 29th. This greatest elongation is greater than the average, as it occurs only a few days before aphelion passage on July 10th. Soon after the first week in June the planet remains above the horizon more than an hour after sunset, and thruout the latter half of the month the interval is over an hour and a half. The planet is not quite as bright as it was during the preceding greatest east elongation in March, but its greater apparent distance from the Sun gives a much better opportunity for naked-eye view. The latter half of June affords the best opportunity of the year for seeing *Mercury* as an evening star. *Mercury* and *Venus* are in rather close conjunction on May 13th, but both are too near the Sun for naked-eye view.

Venus is still a morning star, but thruout the two months it is too near the Sun for naked-eye view. On May 1st it rises only about half an hour before sunrise and at the end of June it is only about three days from superior conjunction, being rather less than 1° west of the Sun.

Mars is in very fine position for evening observation, having passed opposition on April 21st and nearest approach to the Earth on April 27th. On May 1st it is well above the horizon at sunset and does not set until nearly sunrise. By the end of June it will set shortly after midnight. It is in the constellation *Virgo* and moves westward and northward about 9° up to June 1st. It then moves eastward and southward. Thruout the two months it is near the first magnitude star *Spica*, *α Virginis*, and is in conjunction with the star twice, on May 22nd when the planet is moving westward and on June 7th when moving eastward. On the first date the planet is about 2°30′ north of the star, and on the second date about 2° north. After the time of nearest approach to the Earth the planet's distance increases, rather slowly at first but by the end of June it has reached 78 millions of miles, an increase of 24 millions of miles since May 1st. Its brightness consequently falls off more than 50%, but even at the latter date it is more than a full magnitude brighter than *Spica*, the star being not quite a standard first magnitude.

Jupiter is still in fine position in the southwestern quadrant for evening observation. On May 1st it does not set until after 1 A.M. and on June 30th until nearly 10 P.M. It is on the border line between *Cancer* and *Leo* and moves about 9° eastward and 2° southward toward *Regulus*, *α Leonis*. On June 30th it is about 10° west and north of the star.

Saturn is also in good position for evening observation in the southern and southwestern sky. On May 1st it does not set until about 2.30 A.M. and on June 30th about 10.30 P.M. It is in the constellation *Leo*, moving about 2° eastward and 1° southward during the two months. On May 1st it is about 8° south and east of *Regulus*, and moves away from the star during the period. Its brightness is about the same as that of the star. The rings have begun to close up, and at the end of June the minor axis is only a little more than one-tenth of the major.

Uranus is not in good position for observation, rising at about 2.30 A.M. on May 1st and at about 10.30 P.M. on June 30th. It is

nearly stationary in *Aquarius*, moving a fraction of 1° eastward up to June 10th and then moving a little westward for the rest of the month.

Neptune is in the neighborhood of *Jupiter*, but the eastward motion of the latter causes a considerable increase in distance.